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ARTICLE

Education, Employment and Economic Growth with Special Reference to Females in Kerala

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Abstract

Human development is considered to be the ultimate objective of development, with economic growth as a means to achieve it (Ranis et al. in World Dev 28(2):197–219, 2001). Development stands to be justified when it is equipped with good employment opportunities. Employment provides the means for meeting the income and subsistence needs of the individuals and their families, which fulfils the goal of overall and equitable development (Mathew in Int Labour Rev 154:497–518, 2015). Employment levels would rise when there is sufficient and efficient human capital. Human capital establishes an interconnection between employment and development. The relationship between education and employment is better understood through the labour market, which has a mediating role in influencing educational choices and employment prospects. Against this background, this paper tries to examine the interlinkages between human development, economic growth and employment situation in India with special reference to females in Kerala. Using secondary data, this paper tries to address primarily two objectives: firstly, to examine the relationship between educational attainment, employment and economic growth in India and secondly, to explore the trends and pattern in female employment statewise with the main focus on Kerala. There exists a huge mismatch between the demand and supply gap among labour force in all Indian states. Employment trends in India, and in particular, women's employment, have been an issue of considerable discussion in scholarly writings over the last few years. Extensive literature review and data suggest that though there has been a constant rise in the educational level of women in India, the employment rates have not raised at a similar pace. Kerala, the most literate state of the country, shows an identical picture among higher educated women where unemployment rate is as high as 20–30%. Women's individual job preferences, overall high unemployment in the economy, family constraints, lack of adequate skills and discouraged worker effect are some of the probable reasons for high unemployment among females. The study concludes that "Kerala model of development," on the basis of its impressive historical accomplishment in social and human development indicators, is definitely praiseworthy but not to be replicated. It is so because though the model has surpassed every state in terms of human

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development indicators, it showed a development trajectory by fostering unemployment rates, especially in terms of female participation. Therefore, the study suggests that in order to achieve holistic development, there is an urgent need to understand the basic requirement of a particular state. Considering female employment, the study evokes creation of an environment that promotes women to join workforce and thereby attain economic growth. States such as Kerala which have a large pool of educated women must develop policies which aim towards enhancing their employability skills so that the benefits of human capital can be obtained.

Keywords Education · Economic growth · LFPR · WPR · Unemployment

1 Background

Human development is considered to be the ultimate objective of development, with economic growth as a means to achieve it (Ranis et al. 2001). Human capital formation is often considered as one of the ways through which there can be an interconnection between employment and development. For the purpose of translating an outmoded economy into a knowledge-driven one, investment in education is a must. An inclusive education system can be achieved when all the students from different socio-economic backgrounds have access to quality education which could diversify their talents and creativity. Moreover, equal access to education is increasingly viewed as a basic duty of a progressive government and mature society (George 2011). India is one of the world's fastest growing economies, but one of the biggest hurdles in its development process is unemployment, which is largely attributed to the present education system.

Against this background, this paper tries to examine the interlinkage between human development, economic growth and employment in India with special reference to females in Kerala. Kerala makes an interesting case study through its extraordinary performance in socio-economic indicators along with a very high rate of unemployment. This paper has been developed with the purpose of analysing the reasons behind such a high rate of unemployment, especially among females in the state. "Kerala model of development," on the basis of its impressive historical accomplishment in social and human development indicators, is generally regarded as the pathway model for other developing economies (UN-DESA 1975). Human capital and employment are closely linked, which directly or indirectly relates to high economic growth. The demand and supply of education is highly influenced by the growth of the economy. The nature and extent of demand for higher education is directly related to the nature and extent of employment opportunity, which again depends on the overall health of the economy. During periods of unemployment, individuals show strong preferences for those courses which offer better employment prospects. Hence, an important question arises as to how does the labour market respond to education. This paper is prepared by placing an important emphasis on this linkage. The foremost objective of the paper is to establish a linkage between education, employment and economic growth. Secondly, the objective was to identify the gaps in the demand and supply in employment, especially with reference

to Kerala. Thirdly, we have tried to explore the reasons behind such a high rate of unemployment among females in Kerala despite the fact that it has outnumbered each state in India in terms of education.

2 Methodology

Using databases from several secondary sources, viz. Census of India, Central Statistical Organization (CSO), several rounds of NSSO on Employment and Unemployment, Ministry of Human Resources Development (MHRD), Planning Commission of India, Registrar General of India, All Indian Survey on Higher Education, Statistics of School Education, Selected Statistics on School Education, etc., the objectives of the study are accomplished. In order to draw statistical inferences, descriptive statistics and simple regression analysis have been used.

3 Review of Literature

According to Mincer (1991), education has several advantages and aids an individual to achieve better socio-economic status. He stated that an educated worker basically has three fundamental advantages over a less educated worker in the labour market, viz. higher wages, greater upward mobility in income and occupation and greater employment stability. Considering the issue of unemployment in Kerala, Oommen (1992) mentioned that educated unemployment cannot be solved by the improvement in demand but it is the problem related to the education system which produced job seekers rather than job creators; noneducated unemployment can be solved through the creation of job opportunities; unionization is responsible for most of the labour problems of Kerala; the preference for soft jobs has made manual work less attractive and less respectable. Further exploring the issue of educated unemployment in Kerala, Mathew (1995) studied the causes of educated unemployment. He identified proliferation of general higher education, changing expectations of job and a faulty educational system as responsible for high unemployment. The statement "Kerala people are looking for jobs and not for employment" indicates that it was not the demand but the supply constraints that were responsible for unemployment in Kerala. Scholars opined that a major cause of unemployment in India as well as in Kerala is the major sectoral shift, i.e. from being an agro-based economy to a service-led one. Eapen (1994) explained the reasons for the change in the labour demand structure and pointed out that the change in the consumption pattern and the break in the agriculture–manufacturing linkage are responsible for a lack of investment in industries and high unemployment. Kannan (1998) examined the three dilemmas related to Kerala economy: (1) technological choice in the face of high and rising labour costs in labour-intensive activities for maximizing long-term growth and employment, (2) mismatch between labour supply and labour demand as a result of changing job expectations of the younger generation in a technologically stagnant economy and (3) a lack of new investment despite growing loanable funds and declining resistance to technological change. The growth in the agricultural

sector remained stagnant during the 1970s (Kannan and Pushpangadan 1988) due to the reduction in profitability (Kannan 1990). The stagnation in the agricultural sector reduced the demand for labour in the sector. On the other side, the secondary sector also did not gain momentum. High wage cost due to unionization and a lack of improvement in productivity depressed the profitability of the secondary sector. It is argued that productivity was not enhanced, due to a lack of modernization in the sector. The involvement of the trade union in standing against the modernization in order to protect their jobs in the short run led to the long-term decline in job opportunities (Kannan 1998). The demand for labourers in the secondary sector therefore declined. The only sector sustained is the tertiary sector (Prakash 1988; Mathew 1996), which relaxed our economic growth. The main reason for the increased growth in the tertiary sector was the increased demand for construction and consumption goods as a result of the increased remittance from Gulf countries, which started during the 1970s (Kannan 1990; Eapen 1994; Zachariah et al. 1999). The main sectors demanding labour were construction (Eapen 1994), trade, commerce, transport and communication (Kannan 1990; Prakash 1988). This shows that from the 1970s onwards, the demand for labour in agriculture and industry declined and the only sector that gained momentum was the service sector.

In Kerala, international migration started only after 1940 (Zachariah et al. 1999). The impact of this type of migration is of greater importance to Kerala's present economy. The extensive migration from Kerala to the Middle East has attracted the attention of economists and demographers during the past three decades. There are a lot of studies which have addressed the impact of migration on the economy and thereby the labour market (Prakash 1998; Eapen 1994; Zachariah and Rajan 2004; Zachariah et al. 1999). The primary concern of all these studies has been the assessment of the magnitude of migration and the remittances and their impact on the home economy. A few analysed the socio-economic impact on the families (Nair 1989; Gulathi 1993). It is a known fact that the demand for labour is a derived demand created from the demand for the commodities which are produced by the labour. Economic growth of Kerala shows that from the 1960s onwards, especially during the 1970s, the state domestic product showed a structural change from the primary sector to the tertiary sector (Kannan 1990; Kannan and Pushpangadan 1988).

Focusing on employment patterns from a gender perspective, Kumar (1993) stated that in an economy where the agricultural sector is stagnating and the manufacturing sector is characterized by slow growth, the initial losers are females (Kannan 1998). In Kerala, women labour activity is primarily confined to cultivation of food crops, in particular paddy. Paddy cultivation requires around 90% of hired labour: roughly 75% is provided by women. It is pointed out that reduction in area under rice exhibits statistically significant negative correlation with female work participation in Kerala (Mazumdar and Guruswamy 2006). Moreover, the demand which is created within the economy and outside the economy possesses different characteristics. Migration increased the demand for certain categories of workers, especially construction workers. A good part of the remittances received from the Gulf was spent by the households on constructing new houses, buildings and boundary walls, repairing houses, improving land, etc., resulting in a steep increase in the demand for construction workers (Prakash 1998). There was a shift which happened

from the agricultural labourers to casual construction labourers (Mathew 1996). The reduction in the male labourers in the agricultural sector created a labour shortage in cultivation (Francis 1993; Nair 1997; Sasikumar and Raju 2000; George 2003) and in turn reduced the profitability of agriculture. This reduced the demand for female labourers, who were primarily confined to cultivation.

From the above findings with reference to the demand side of the labour market, we deduce that there has been a decline in job opportunities in the agricultural and industrial sectors. In addition, the structural change in the labour demand has been in favour of men. Thus, the structural changes clubbed with the decline in job opportunities have adversely affected the demand for women in the labour markets.

4 Employment and Unemployment Scenario in Indian States

The labour force participation rate describes the supply side of labour force in the economy, while the workforce participation rate represents the demand side of labour force in the economy (Mathew 2012). The labour force participation rate (LFPR) in India is around 40%, but gender-wise, for females it is only 22.5%. The gap in male–female labour force participation is such that the LFPR for rural females of the age group over 15 years is only 35.8%, while for rural males it is more than double at 81.3% (2011–2012). This is quite baffling in a country with a huge demographic dividend of the working population. Studies undertaken to analyse this trend of the low and declining female LFPR (FLFPR) have attributed it to education and income effect (Rangarajan et al. 2011; Abraham 2013). As per the 68th round, around 57% of the total population are employed, while the labour force participation rate at the all India level for the age group of 15–59 years is 58.3%. The unemployment rate at the all India level is 2.3% in 2011–2012 based on UPSS criteria. Table 1 shows the demand and supply labour condition in Indian states. As per the NSSO 61st round (2004–2005), worker population ratio (WPR) shows that out of the total population in India, 38% are employed, while as per the 68th round, around 57% are employed. In 2004–2005, the labour force participation rate at the all India level was 39.2% while as per the 68th round around 58% are employed. The unemployment rate at the all India level was only 3.1% in 2004–2005, while it declined to 2.3% in 2011–2012 based on UPSS criteria.

Table 2 helps to analyse the mismatch between the demand and supply gap among labour force in Indian states. The state with the minimal level of unemployment is Gujarat with just 0.5% unemployment rate, while Kerala tops the chart with 7.4% unemployment rate. Even the backward states of the country are far better in unemployment position than Kerala. Among the states and union territories, the unemployment rate exhibits wide variations. According to ILO (2015), Kerala exhibits the highest unemployment rate (12.5%), while Gujarat has the lowest unemployment rate (0.9%), followed by Karnataka (1.5%), Chhattisgarh (1.9%) and Maharashtra (2.1%). The wide disparity between the demand and supply components of labour force is the main reason behind Kerala's high rate of unemployment. The demand-side factor includes the employment opportunities available, while the supply-side factor includes the education system that exists in the economy. This indicates a

Table 1 State-wise labour force participation rate, workforce participation rate and unemployment rate in India (2011–2012 and 2004–2005) UPSS. *Source*: NSSO 68th round, 61st round

States	61st round				68th round				61st round		68th round	
	LFPR		WPR		LFPR		WPR		UR		UR	
	rp	up	rp	up	rp	up	rp	up	rp	up	rp	up
Andhra Pradesh	54.8	40.6	54.4	39.2	52.8	38	52.2	36.4	7	36	12	43
Bihar	32	29	31.6	27.2	28.4	26.7	27.5	25.3	15	64	32	56
Chhattisgarh	51.2	37.7	50.9	36.4	49	39.3	48.6	37.6	6	35	8	43
Goa	38.5	39.8	34.2	36.3	39.9	35.3	37.8	33.7	111	87	51	46
Gujarat	51.6	38.7	51.3	37.7	44.8	38.7	44.7	38.4	5	24	3	8
Haryana	43.4	35.3	42.4	33.9	36.5	33.1	35.6	31.8	22	40	24	42
Himachal Pradesh	54	47.4	53	45.6	53.8	43.3	53.3	41.6	18	38	10	40
Jammu and Kashmir	42.2	34.8	41.6	33.1	41.5	36.2	40.5	33.7	15	49	25	70
Jharkhand	43.3	33.3	42.7	31.1	37.8	30	37	28.4	14	65	21	51
Karnataka	54.6	39.7	54.2	38.6	45.4	38.8	45	37.6	7	28	9	29
Kerala	44.8	44	40	37.1	41	38.6	38.2	36.3	107	156	68	61
Madhya Pradesh	46.1	35.7	45.9	34.7	40.7	33.4	40.5	32.5	5	28	4	26
Maharashtra	52.7	39.9	52.1	38.4	49	37.4	48.6	36.5	10	36	7	23
Orissa	47.6	38.6	45.2	33.4	42.7	39.5	41.7	38.1	50	134	22	35
Punjab	45.8	38.5	44	36.5	41.4	37.9	40.6	36.8	38	50	19	28
Rajasthan	46.3	35.9	45.9	34.9	42.7	33.6	42.4	32.6	7	29	7	31
Tamil Nadu	53.4	43.4	52.8	41.8	49.5	40.3	48.5	39.2	12	35	20	27
Uttaranchal	48	35.1	47.4	33.2	39	32.2	38.1	30.5	13	54	25	53
Uttar Pradesh	37.3	34.2	37.1	33.1	34.1	33.1	33.8	31.7	6	33	9	41
West Bengal	38.9	41	37.9	38.4	40	41.9	39	40	25	62	27	48
India (all states)	44.6	38.2	43.9	36.5	40.6	36.7	39.9	35.5	17	45	17	34

wide gap in the demand and supply of labour force in the state of Kerala. Table 2 also takes into consideration the disparities among states in terms of unemployment.

The trends in employment elasticity presented in this paper are indicative of the response of employment in terms of growth of employed persons to GDP growth. Employment elasticity can be defined as employment intensity of growth or elasticity of employment with respect to output. Table 3 predicts the change in employment scenario with respect to growth in three time periods, viz. 2004–2005 to 2009–2010, 2009–2010 to 2011–2012 and 2004–2005 to 2011–2012. As per the figures at the all India level, the intensity of employment change to output growth can be termed as elastic with positive figures. With 1% change in growth, employment would increase by 0.24% during 2004–2005 to 2011–2012. However, employment elasticity was lower during the period 2004–2005 to 2011–2012. This indicates declining employment elasticity with respect to the Indian economy. The table also depicts the changing scenario of employment elasticity with respect to growth in Indian states. The period from 2009–2010 to 2011–2012 has marked an increasing

Table 2 State-wise labour force participation rate, workforce participation rate and unemployment rate in India (2011–2012) UPSS (15–59 years). *Source*: NSSO 68th round

States	LFPR	WPR	UR 68th round
Andhra Pradesh	66.4	64.9	2.2
Bihar	45.4	43.8	3.4
Chhattisgarh	71.4	70.3	1.5
Goa	53.9	51.2	5
Gujarat	61.1	60.8	0.5
Haryana	51.5	50	3.1
Himachal Pradesh	72.3	71.3	1.4
Jammu and Kashmir	57.2	55.1	3.7
Jharkhand	56	54.5	2.7
Karnataka	59.8	58.8	1.6
Kerala	57	52.8	7.4
Madhya Pradesh	58.9	58.3	1
Maharashtra	62.1	61.2	1.4
Odisha	61.6	60.1	2.5
Punjab	56.6	55.2	2.4
Rajasthan	61.9	61.2	1.2
Tamil Nadu	63	61.4	2.5
Uttarakhand	57.9	56	3.2
Uttar Pradesh	53.9	52.9	1.8
West Bengal	57.9	56	3.3
India (all states)	58.3	57	2.3

LFPR labour force participation rate, *WPR* workforce participation rate, *UR* unemployment rate, *rp* rural person, *up* urban person

trend from the previous period in majority of states. The labour force participation rate, which reflects the persons who express their willingness to work, has been declining from 430 per thousand persons in 2004–2005 to 400 per thousand persons in 2009–2010 and further to 395 per thousand persons in 2011–2012. The decline in LFPR is visible in the case of rural females, possibly on account of greater number of persons opting for education/skill development. Studies using NSSO data show that there has been a steady increase in the ratio of students to total population from 20.5% in 1993–1994 to 24.3% in 2004–2005 and further to 26.6% in 2009–2010 (Thomas 2012).

5 Education, Employment and Economic Growth

Education plays a dominant role in translating an outmoded economy into a knowledge-driven one. In India, the literacy rate is used as an important determinant of enhancing human capital. According to Census (2011), India's literacy rate stood at 74% with a hike of an approximately 9% at the all India level and in specific more than 11% and 7% hike in female and male literacy rates, respectively, from the past

Table 3 Employment elasticity with respect to GDP. *Source*: several rounds of NSSO on Employment and Unemployment Surveys

States	2004–2005 to 2009–2010		2009–2010 to 2011–2012		2004–2005 to 2011–2012		2004–2005 to 2009–2010	2009–2010 to 2011–2012	2004–2005 to 2011–2012
	ER	GR	ER	GR	ER	GR	EE	EE	EE
Andhra Pradesh	−0.79	7.28	−0.44	6.27	−0.75	7.84	−0.11	−0.07	−0.10
Bihar	1.71	6.45	−0.84	8.25	0.95	7.96	0.26	−0.10	0.12
Chhattisgarh	0.09	6.88	3.86	5.76	1.5	7.34	0.01	0.67	0.20
Goa	0.65	7.16	5.69	12	2.59	9.89	0.09	0.47	0.26
Gujarat	−0.61	8.63	−0.12	5.8	−0.5	8.67	−0.07	−0.02	−0.06
Haryana	0.95	8.05	−3.36	5.08	−0.56	7.97	0.12	−0.66	−0.07
Himachal Pradesh	0.05	6.88	0.32	5.29	0.15	7.17	0.01	0.06	0.02
Jammu and Kashmir	0.80	4.82	−0.08	4.47	0.56	5.31	0.16	−0.02	0.11
Jharkhand	−0.52	4.37	2.32	6.57	0.46	5.75	−0.12	0.35	0.08
Karnataka	−1.29	6.81	−2.20	4.52	−1.79	6.82	−0.19	−0.49	−0.26
Kerala	−0.96	6.86	0.36	4.89	−0.58	7	−0.14	0.07	−0.08
Madhya Pradesh	1.07	6.80	−0.81	5.25	0.49	7.09	0.16	−0.15	0.07
Maharashtra	−0.99	8.21	0.34	5.25	−0.61	8.15	−0.12	0.06	−0.07
Odisha	−0.06	6.88	1.39	3.87	0.47	6.62	−0.01	0.36	0.07
Punjab	−1.05	6.16	1.02	4.3	−0.41	6.25	−0.17	0.24	−0.07
Rajasthan	1.68	6.49	−0.35	6.36	1.12	7.27	0.26	−0.05	0.15
Tamil Nadu	−2.15	8.47	−0.05	6.7	−1.63	8.9	−0.25	−0.01	−0.18
Uttar Pradesh	1.45	5.88	2.94	4.42	2.19	6.08	0.25	0.66	0.36
Uttarakhand	−0.27	12.63	−2.18	6.36	−1.02	11.88	−0.02	−0.34	−0.09
West Bengal	−0.27	5.76	1.54	3.47	0.65	5.63	−0.05	0.44	0.12
India (all states)	2.30	7.23	0.15	5.13	1.77	7.36	0.32	0.03	0.24

Directorate of economic statistics of respective State Governments and All India-CSO 2014

ER growth rate of employment, *GR* growth rate of GDP, *EE* employment elasticity

decade. The rising trend can be accredited to the policies that pay utmost attention towards education. From Table 3, one may conclude that not only male literacy has seen a rising trend but also female literacy has seen a shift from 53% (2001) to 65% (2011). Across states, the gender gap is likely to be lowest in Kerala, followed by Goa and Punjab.

Apart from the literacy rate, another indicator showing education status is the gross enrolment ratio. It measures the total population of all ages enrolled in different education programmes and the total population of the country in different age groups. In our study, we have analysed the gross enrolment ratio of primary,

secondary, higher and technical education. Ranis et al. (2002) in their paper about interlinkage between human development and economic growth analysed that all the levels of education are necessary for economic development of an economy.

From Table 4, it can be easily analysed that Kerala has been able to achieve 89.7% universalization in primary and secondary education. Strong historical background and implementation of policies which improve the level of education have always been on the priority list of the Kerala government. The table shows a quite dismal picture in the state of Kerala. As per the NSSO 68th round, the state has only 23.1% persons enrolled in higher education in 2011. As mentioned by Sreenivasan (2012), Kerala seems to have lagged behind in competitiveness in terms of higher education. The model of development cannot be applauded for its achievements in the high level of education. The female and male enrolment rates is low in higher education. Though females have a comparatively high proportion

Table 4 State-wise and gender-wise literacy rates in India. *Source*: Census of India 2011, 2001

State/union territory	2001			2011			2001 GAP	2011 GAP	Total GAP
	Female	Male	Total	Female	Male	Total			
Andhra Pradesh	50.4	70.3	60.5	59.1	74.9	67	19.9	15.8	6.5
Bihar	33.1	59.7	47	51.5	71.2	61.8	26.6	19.7	14.8
Chhattisgarh	51.9	77.4	64.7	60.2	80.3	70.3	25.5	20.1	5.6
Goa	75.4	88.4	82	84.7	92.6	88.7	13	7.9	6.7
Gujarat	58.6	80.5	70	69.7	85.8	78	21.9	16.1	8
Haryana	45.7	78.5	67.9	65.9	84.1	75.6	32.8	18.2	7.7
Himachal Pradesh	67.4	85.4	76.5	75.9	89.5	82.8	18	13.6	6.3
Jammu and Kashmir	43	66.6	55.5	56.4	76.8	67.2	23.6	20.4	11.7
Jharkhand	38.9	67.3	53.6	55.4	76.8	66.4	28.4	21.4	12.8
Karnataka	56.9	76.1	66.6	68.1	82.5	75.4	19.2	14.4	8.8
Kerala	87.9	94.2	90.9	92.1	96.1	94	6.3	4	3.1
Madhya Pradesh	50.3	76.1	63.7	59.2	78.7	69.3	25.8	19.5	5.6
Maharashtra	67	86	76.9	75.9	88.4	82.3	19	12.5	5.4
Odisha	50.5	75.4	63.1	64	81.6	72.9	24.9	17.6	9.8
Punjab	63.4	75.2	69.7	70.7	80.4	75.8	11.8	9.7	6.1
Rajasthan	43.9	75.7	60.4	52.1	79.2	66.1	31.8	27.1	5.7
Tamil Nadu	64.4	82.4	73.5	73.4	86.8	80.1	18	13.4	6.6
Uttar Pradesh	42.2	68.8	56.3	57.2	77.3	67.7	26.6	20.1	11.4
Uttarakhand	59.6	83.3	71.6	70	87.4	78.8	23.7	17.4	7.2
West Bengal	59.6	77	68.6	70.5	81.7	76.3	17.4	11.2	7.7
India	53.7	75.3	64.8	65.5	82.1	74	21.6	16.6	9.2
Mean	55.505	77.215	66.95	66.6	82.605	74.825			
SD	12.92	8.00851	10.028	10.4111	6.0828	7.99699			
CV	0.23277	0.10372	0.1498	0.15632	0.07364	0.10688			

of enrolment, the position of males is quite disappointing. Only 19% of males got enrolled in higher education, which is far less as compared to other states.

State-wise trends depict one more picture in terms of South Indian states, wherein Tamil Nadu has shown a good picture in terms of enrolment with approximately 40% total enrolment rate in 2011 from just 11% in 2001 (Sreenivasan 2012). Both male and female enrolment rates have seen a sharp rise. The female enrolment rate has increased to 35% in 2011 from 10% in 2001. Following Tamil Nadu are the states Goa, Maharashtra, Andhra Pradesh, Haryana, Himachal Pradesh. Backward states like Bihar, Odisha, West Bengal, Jharkhand and Uttar Pradesh did not show an encouraging picture of enrolment. According to Tilak (2001), higher education contributes much strength to the overall education system. The internal rate of return is much higher in the case of higher education. Technical education which includes diploma courses, viz. certificate courses, polytechnics, ITIs, integrated courses, also plays a role in economic development. Imparting technical and vocational education has been the key focus of Eleventh and Twelfth Five Year Plans. The shifting focus of the government from general education to skill education is due to the low level of quality education and skill base among Indian students. Table 5 depicts the position of technical education in Indian states. It specifies the enrolment rate of persons in the age group of 15–29 years. The all India level specifies a very dismal picture. As per All Indian Secondary Higher Education, only 14% of people got enrolled in diplomas. Figures of female are very depressing: only 9% got enrolled in 2011. Kerala, which is always appreciated for its general educational level, has not been able to enrol its population in skill-level courses. Only 9.17% of total population got enrolled in diploma courses, with females again ahead of males. States like Tamil Nadu, Karnataka, Maharashtra and Punjab have performed quite well with enrolment rates in various diploma courses. On the other hand, backward states like Bihar and Uttar Pradesh have not performed well.

Table 6 gives the data of the people who are literate in the age group of 15 years and above. Kerala has been able to achieve a good number of adult literacy (93.5). Apart from Kerala, mostly all the major states have achieved fairly good numbers.

6 Relationship Between Educational Level and NSDP Per Capita Income: State-wise Analysis

6.1 Education Up to Secondary Level and NSDP Per Capita

Performing a simple regression analysis and taking per capita NSDP as a dependent variable and enrolment in primary and secondary education as an independent variable, it has been seen that there exists a positive relationship between the enrolment rates and PCNSDP:

$$\text{Per capita NSDP at constant prices} = -2.332536 + \beta\,(2.89) + \mu i$$

where per capita NSDP at constant prices is taken as a dependent variable and GER (I–XII) as an independent variable. Regression analysis also specifies the p

Table 5 State-wise gross enrolment ratio in primary, secondary and higher education in India. *Source*: Statistics of School Education 2011–2012, all Indian Higher Education Survey 2011–2012

States	Classes I–XII (6–17 Years) 2011–2012			Higher education (18–23)			Diploma %		
	Boys	Girls	Total	Male	Female	Total	Male	Female	Total
Andhra Pradesh	76.8	78.3	77.5	31.8	23.4	27.6	4.22	4.64	4.40
Bihar	77.1	75.5	76.3	14.7	11.2	13.1	2.57	3.26	2.84
Chhattisgarh	89.8	85.9	87.9	12.1	9.9	11	11.80	5.29	8.89
Goa	105.4	102.3	103.9	34.9	40.4	37.4	7.43	3.33	5.40
Gujarat	84	79.8	82.1	19.3	15.7	17.6	13.71	5.75	10.39
Haryana	76.7	83.1	79.5	28.4	27.3	27.9	12.87	3.16	8.53
Himachal Pradesh	100.3	100.6	100.4	25.7	24.2	25	10.36	4.64	7.65
Jammu and Kashmir	75.5	75.2	75.3	22.6	24.9	23.7	0.31	0.08	0.20
Jharkhand	81.4	83.8	82.6	9.1	7.6	8.4	0.01	0.09	0.05
Karnataka	85.5	85.5	85.5	25.2	22.8	24	15.89	13.46	14.78
Kerala	89.7	91	90.3	19.3	26.9	23.1	8.03	9.98	9.17
Madhya Pradesh	98.7	96.6	97.7	19.8	14.6	17.4	8.17	1.75	5.65
Maharashtra	88.4	86.4	87.5	29.7	24.8	27.4	12.72	11.63	12.26
Odisha	80.5	76.3	78.4	18.4	14.3	16.3	12.63	3.08	8.44
Punjab	87.7	88.2	87.9	22.6	17.1	20	18.94	6.30	14.00
Rajasthan	86.3	78.8	82.8	20.8	14.9	18	3.79	1.57	2.92
Tamil Nadu	93.1	97	95	41.1	35.2	38.2	21.66	4.96	13.95
Uttar Pradesh	86.1	83	84.6	15.6	18.1	16.8	1.08	0.33	0.71
Uttarakhand	83.3	84.5	83.9	26.5	27.9	27.2	7.64	3.21	5.41
West Bengal	84.3	90.3	87.2	14.7	10.7	12.8	4.28	1.46	3.10
India (all states)	84.9	84.1	84.5	21.6	18.9	20.4	9.04	4.93	7.21

stats at 0.000% level of significance. R square explains 24% of variance among the variables.

The equation above shows the cause-and-effect relationship between gross enrolment and per capita NSDP. The result depicted in the above regression analysis shows that if we increase 1% enrolment in primary and secondary levels, then per capita NSDP will increase by 2.89 units. The result of the regression analysis shows that the relationship between PCNSDP and enrolment in primary and secondary education is positive.

6.2 Higher Education and NSDP Per Capita

Higher education refers to the number of students getting enrolled in the third level of education, i.e. students getting enrolled in graduation, post-graduation, diploma courses, engineering colleges, medical colleges, polytechnics, etc. It is generally believed that elementary education forms the basis of quality growth, but one may not ignore the importance of higher education.

Table 6 Educational level at the age of 15 years and above. *Source*: Education for All in India: Review (2014)

State/UT	Male (%)	Female (%)	Persons (%)
Andhra Pradesh	71.5	53.1	62.2
Bihar	67.5	42.2	55.4
Chhattisgarh	77.7	53.0	65.3
Goa	92.2	83.1	87.7
Gujarat	84.2	65.2	75.0
Haryana	82.1	60.8	72.0
Himachal Pradesh	88.3	72.4	80.4
Jammu and Kashmir	74.3	49.8	62.7
Jharkhand	73.6	46.5	60.4
Karnataka	80.2	63.4	71.9
Kerala	95.9	91.3	93.5
Madhya Pradesh	75.8	51.2	63.9
Maharashtra	87.4	72.6	80.2
Odisha	79.8	58.8	69.4
Punjab	78.3	67.3	73.0
Rajasthan	76.1	43.6	60.3
Tamil Nadu	85.2	69.8	77.5
Uttar Pradesh	74.6	49.2	62.4
Uttarakhand	86.1	64.8	75.5
West Bengal	79.9	66.3	73.3
India (all states)	78.8	59.3	69.3

By applying the simple regression analysis, one could easily depict a highly positive relationship between the two components:

$$\text{Per capita NSDP at constant prices} = 7.638249 + \beta 0.96 + \mu i$$

where per capita NSDP at constant prices is taken as a dependent variable and enrolment in higher education, i.e. gross enrolment ratio (XII and above), is taken as an independent variable. Empirical results from the regression analysis showcased that 1% increase in enrolment in higher education results in 0.96% increase in per capita NSDP. The above regression analysis is also satisfied at 0.000% level of significance. R square explains 54% of variance among the variables.

6.3 Technical Education and Economic Growth

The high numbers of the unemployment rate clearly specify the need for skill development in today's environment. If technical education is linked with growth, then a simple regression analysis also specifies a positive relationship between these two indicators:

$$\text{Per capita NSDP at constant prices} = 10.18106 + \beta.17 + \mu i.$$

According to the analysis, a unit increase in technical education will lead to 0.17 units increase in per capita income. The above relationship also specifies p stats at 1% level of significance. *R* square explains 31% of variance among the variables.

Screening hypothesis theory by Mincer clearly specifies the need for making skilled and more productive workers who are generally preferred to attain good employment opportunities. Therefore, technical education proves to be a vital factor for eradication of unemployment. In other words, a higher level of technical education is associated with a lower rate of unemployment. This has been shown in the following regression equation:

$$\text{Gross Enrolment in Diploma courses} = 8.062639 + \beta(-.0434111) + \mu i.$$

The above equation depicts an inverse relationship between enrolment in diploma courses and unemployment ratio. This inverse relationship shows that for the purpose of achieving better productive growth and lowering unemployment, investment in technical education is a must. It might be seen that a 1% increase in enrolment in diploma courses reduces the unemployment rate by 0.5%.

For the purpose of examining the relationship between ALR and PCNSDP, a simple regression analysis is performed:

$$\text{Per capita NSDP at constant prices} = -3.03 + \beta(3.19) + \mu i.$$

The results of the analysis reveal that there exists a highly significant and positive relationship between the two. If adult literacy increases by 1%, then PCNSDP would surge by 3.19%. *R* square explains 68% of variance among the variables.

7 Kerala's Development Scenario

The Kerala model of development has always been praised for its achievements in human development indicators. The Indian economy at present is suffering from the problem of excess of youth who are educated but cannot find a suitable job for themselves. Adding cherry on the top of India's unemployment problem is the fact that the most developed state of the Indian economy is topping the chart in terms of its unemployment rate. As per the Census Report 2011, 10 million Indians with graduate, postgraduate and technical degrees were looking for work, meaning that 15% of all Indians with the highest levels of education were seeking a job as of 2011. According to NSSO (68th round), the unemployment rate is around 2.3%, with Kerala having the highest unemployment rate to the extent of 7.4% (refer Table 1).

The problem with Kerala is of educated unemployment suffering from a lack of skill education. Considering gender statistics, literature and data suggest that in Kerala, females who are highly qualified are mostly unemployed. The unemployment rate of females according to the NSSO 68th round was 154, which is highest among all the states. Now the following question arises: if females are highly qualified, then why are they not able to fetch jobs? One of its reasons is a lack of technical and vocational education. As per the recent Labour Survey on Labour Force Participation Rate, Kerala women have one of the lowest participation rates in India. Only 23% of women are employed and are economically active. The low rate of participation among females is a national phenomenon, but for the economy that is doing fairly good in terms of education among females, this is a complex process.

The reasons for the low participation are possibly the existing education system that prevails in the state of Kerala, predominance of arts and science colleges with conventional courses, huge fees charged in self-financing colleges, a lack of professional colleges in the government sector, gender discrimination, etc. (Anandan and Anchayil 2015). According to Mathew (2015), the unemployment rate of those with educational qualifications higher than SSLC went up only marginally from 6.96 to 7.24% in the country, while in Kerala it went up from 14.38 to 17.88% in the case of males and from 17.11 to 24.23% in the case of females. This clearly indicates that improvement in literacy and education has in no way improved the employment situation in the state. It is often held that education improves the employment opportunities of women and raises their earning potential. But the experience of Kerala suggests an inverse relationship between education and female employment.

The pattern of employment, especially female employment, in the state is a complex phenomenon. Demographic, social, economic and even political factors have contributed to this state of affairs. It is observed that most of the increase in employment under trade and commerce, construction, private transportation and even manufacturing is accounted for by casual labour. This process of casualization has been more severe in the case of women than in men because of their limited mobility. Kerala women do not go out of their home villages to find work nearly as easily as men do.

Table 7 presents the brief scenario about the participation of females in the Indian economy and Kerala economy. These accomplishments were hailed as a classic case of "welfare by public intervention" (Sato 2004), whereby public action and state provisioning of public goods and basic needs offered an alternative path towards social development, despite low economic growth (Dreze and Sen 1997). These socio-demographic advances created an environment conducive to women's entry into paid activities in the market on a considerable scale. While their educational attainments equipped them to seek work in highly paid service occupations, the state's socio-demographic progress provided further stimulus to their labour market attachment. This resulted in remarkably high rates of female labour force participation, particularly among higher educated women, by comparison with the rest of the country. Even among higher educated women across India, participation was lower, highlighting the influence of factors other than education and earnings in determining women's economic decisions.

Since 2004, however, female labour force participation in Kerala has taken a downward trend, as it has happened throughout India. In Kerala, unemployment

Table 7 Female education and employment scenario in Kerala. *Source*: Statistics of School Education 2011–2012, all Indian Higher Secondary Education 2011–2012, NSSO 68th round on employment and unemployment

Female participation in the economy 2011–2012							
	Fem GER (%)	Fem HER (%)	Domestic duty	Regular salaried	LFPR	WPR	UR
Kerala	91	26.90	547	286	354	300	154
India	84.10	18.90	609	127	331	323	25

among higher educated women remained as high as 20–30%. Such high rates of female unemployment have been explained in terms of women's job preferences, overall high unemployment in the economy and constraints on skill utilization, a lack of employable skills, etc. (Devi 2002; Kodoth and Eapen 2005; Mathew 1995; Nagaraj 1999).

Table 8 shows the position of females in the districts of Kerala. Kerala has an outstanding female enrolment in education: almost 100% of females in Kerala are educated. But a deeper analysis of districts shows a very different picture. As said above, there is a question on higher education in Kerala and especially among females. Even the employment opportunities are very much low as compared to the males in Kerala. Only in Kasaragod District, females are enrolled in postgraduate courses and are mostly doing domestic duty or are regular salaried or daily wage earners. The above analysis clearly depicts that females are opting domestic duty as the second option in employment even if they are educated. It is found that the majority of females in Kerala are engaged only in domestic duties, which is the main reason for the lower labour force participation of females. It is important to analyse the specific issues or factors that determine the extent of domestic work. NSSO 68th round data provide certain specific information related to the persons who are engaged in domestic work as principal status. The analysis will help us to support the arguments that domestic work-related time pressure and a lack of remunerative jobs are the major reasons for the labour market issues of Kerala, especially among females. The extent of labour force participation among females is directly linked with domestic duty. Hence, any attempt to raise the labour force is possible only by reducing the domestic work time. So, the primary knowledge of time needed to spend on household duties is necessary to follow proper labour market strategies. Examining the qualitative shifts in Kerala's female employment and labour force participation, the paper has highlighted the disproportionate decline in participation among higher educated and relatively well-off women. Apparently discouraged by labour market conditions, younger women are delaying their entry into the labour market, increasing the time they spend on education when they can afford to do so or giving up on the labour market altogether. The reason is that the quality of employment plays a major role in workers' labour force participation decisions, especially among women with higher education and high reservation wages (Mathew 2015).

8 Conclusion

The study finds a positive relationship between educational level and GDP per capita. However, this appears to be declining in employment elasticity across almost all states and in India. This means growth in output has not been translated into adequate employment generation. The paper also reveals that educational attainment has a positive role in raising national per capita income. Further technical education bears a negative relationship with unemployment, indicating that investing in technical education is a need of the hour.

Backward economies need to learn from Kerala model in terms of good achievement in human development indicators; especially, improvement in the level of

Table 8 Educational and activity status: district-wise analysis of females. *Source*: NSSO unit-level data (68th round)

Districts	Not literate (%)				Others	Edu ins
	Domestic duty	Casual labour	Unemployed	Employed (except casual labour)		
Alappuzha	33.87	19.35	4.84	12.9	14.52	14.52
Ernakulam	26.09	17.39	4.35	23.19	7.25	18.84
Idukki	25.62	15.38	10.26	20.51	15.38	12.82
Kannur	26.5	14.53	0.85	14.52	19.66	23.93
Kasragod	25.01	43.75	NA	25	NA	6.25
Kollam	20	35	2.5	30	12.5	NA
Kottayam	25.93	14.81	9.26	16.67	12.96	20.37
Kozhikode	34.55	9.09	2.73	16.37	10.92	26.36
Malappuram	26.47	8.83	4.71	18.24	12.94	28.82
Palakkad	30.77	17.94	0.85	17.95	17.09	15.38
Pathanamthitta	44.12	29.41	2.94	11.76	5.84	5.88
Thiruvananthapuram	39.59	25	10.42	20.84	NA	4.17
Thrissur	31.11	7.78	1.11	23.33	16.67	20
Wayanad	33.33	8.33	8.33	25	2.78	22.22
Kerala	29.43	14	3.41	18.36	14.59	19.58
Districts	Secondary (%)					
	Domestic duty	casual labour	Unemployed	Employed (except casual labour)	Others	Edu ins
Alappuzha	27.06	9.43	4.71	27.06	9.42	17.65
Ernakulam	25.62	13.22	4.13	20.6	13.22	23.14
Idukki	21.74	19.57	4.35	19.57	4.35	30.43
Kannur	23.57	12.14	1.43	19.33	10	33.57
Kasragod	34.29	17.14	5.71	20	2.86	20
Kollam	30.95	19.05	7.14	9.52	2.38	30.95
Kottayam	19.44	9.72	8.33	36.11	12.51	13.89
Kozhikode	29.58	5.63	2.81	26.76	4.92	30.28
Malappuram	30.84	5.6	11.22	18.69	3.73	29.91
Palakkad	30.67	16	2.67	14.67	13.33	22.67
Pathanamthitta	30.26	1.32	5.27	38.16	1.32	23.68
Thiruvananthapuram	21.95	8.13	4.88	25.21	10.57	29.27
Thrissur	25.21	8.13	2.44	30.9	7.32	26.02
Wayanad	21.95	4.88	4.88	26.83	2.44	39.02
Kerala	25.93	9.88	4.79	24.16	8.18	27.08

Table 8 (continued)

Districts	Higher secondary (%)					
	Domestic duty	Casual labour	Unemployed	Employed (except casual labour)	others	Edu ins
Alappuzha	28.3	9.43	5.66	28.3	3.77	24.53
Ernakulam	25.68	12.16	4.05	27.02	4.05	27.03
Idukki	23.53	5.88	5.88	23.52	11.76	29.41
Kannur	31.4	9.3	3.29	17.44	5.82	32.56
Kasragod	33.33	16.67	4.17	12.5	8.34	25
Kollam	56	8	4	12	4	16
Kottayam	21.21	9.09	9.09	15.15	15.15	30.3
Kozhikode	36.46	5.21	3.12	29.16	6.25	19.79
Malappuram	26.03	2.74	1.37	16.44	10.96	42.47
Palakkad	21.28	4.26	8.52	21.29	8.51	36.17
Pathanamthitta	16.22	5.41	2.7	16.22	13.52	45.95
Thiruvananthapuram	23.07	5.13	6.41	29.49	5.13	30.77
Thrissur	33.71	8.99	6.74	15.73	4.5	30.34
Wayanad	26.93	3.85	NA	26.92	11.5	30.77
Kerala	28.13	7.13	4.63	22.89	7.13	30.13
Districts	Graduate females (%)				Others	Edu ins
	Domestic duty	Casual labour	Unemployed	Employed		
Alappuzha	19	6	4	29.79	19.16	21.28
Ernakulam	16	5.06	5.06	41.72	13.93`	17.72
Idukki	15.38	NA	15.38	30.77	7.69	30.77
Kannur	14	4	2	39.21	10	31
Kasragod	22	NA	11	34	11	22
Kollam	16	4	16	52	NA	12
Kottayam	27.78	2.78	5.56	25	8	30.56
Kozhikode	20.29	4.35	13.04	27.63	10.15	24.64
Malappuram	19.23	NA	11.54	42.31	11.54	15.38
Palakkad	26.83	7.32	NA	19.51	14.64	31.71
Pathanamthitta	29.17	4.17	NA	29.17	16.67	20.83
Thiruvananthapuram	18.61	NA	9.3	48.83	4.65	18.6
Thrissur	27	4.88	1.11	24	14.64	20.73
Wayanad	13.33	NA	NA	40.01	NA	46.67
Kerala	20.96	3.73	5.59	33.23	13.82	22.67

*Edu ins** Educational institutions, *Others** pensioner, prostitution, unpaid family worker, disability

technical education seems to be the necessity of time particularly with reference to females. Learning from Kerala's experiences, states should focus not only upon achieving good numbers in primary and secondary education but also on higher percentage of enrolment in higher education as well as in specific technical education, especially among females. This paper deals with establishing a relationship between education, growth and employment. To tackle unemployment, imparting good technical education is essential. On the sustainability of Kerala model, there is a strong case for rapid expansion of higher education. It is important to see that new universities or colleges are set up after careful consideration of the needs on the one hand, and more importantly, ensuring adequate resource support on the other hand. Even the literature by eminent economists suggests that the lack of technical education among females and the small number of females enrolling in professional courses are the main hurdles between the demand and supply gap of labour.

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